

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method of refrigerant level monitoring in a refrigerant circuit of an air-conditioning or heat-pump system having a compressor and a refrigerant which may, depending on the operating point, be operated in the supercritical range, the method comprising:

at least in-operation level monitoring with the compressor switched on, measuring the refrigerant superheat ($dT_{\text{ü}}$) at the evaporator of the system, and determining whether the measured superheat ($dT_{\text{ü}}$) lies above a predetermined limiting value ($dT_{\text{üG}}$), as an indication of improper filling, wherein, the refrigerant superheat ($dT_{\text{ü}}$) at the evaporator is measured by using the difference between a temperature (T_{LVA}), measured on the evaporator outlet side, of a medium led over the evaporator for the purpose of cooling the medium, and the refrigerant temperature (T_{KVE}) measured on the evaporator inlet side.

2. (Cancelled)

3. (Original) A method as claimed in claim 1, wherein the system comprises an air-conditioning system employing CO_2 as refrigerant.

4. (Original) A method as claimed in claim 3, wherein the air-conditioning system comprises an automotive air-conditioning system.

5. (Previously Presented) An apparatus for refrigerant level monitoring in a refrigerant circuit of an air-conditioning or heat-pump system having a compressor and a refrigerant which may, depending on the operating point, be operated in the supercritical range, the apparatus comprising:

at least a system for in-operation level monitoring with the compressor switched on, comprising detectors for measuring the refrigerant superheat ($dT_{\text{ü}}$) at the evaporator of the system, and a calculation circuit for determining whether the measured superheat ($dT_{\text{ü}}$) lies above a predetermined limiting value ($dT_{\text{üG}}$), as an indication of

improper filling, wherein the detectors for measuring the refrigerant superheat ($dT_{\ddot{u}}$) at the evaporator comprise a first detector for measuring a temperature (T_{LVA}) on the evaporator outlet side, of a medium led over the evaporator for the purpose of cooling the medium, and a second sensor for measuring the refrigerant temperature (T_{KVE}) on the evaporator inlet side, and wherein the calculation circuit is programmed to determine whether the measured superheat ($dT_{\ddot{u}}$) lies above a predetermined limiting value ($dT_{\ddot{u}G}$) based on a difference between the temperature (T_{LVA}) and the temperature (T_{KVE}).

6. (Currently Amended) An automotive vehicle, comprising:

a motor and

an air-conditioner having a refrigerant circuit including a compressor and a refrigerant comprising CO₂ which may, depending on the operating point, be operated in the supercritical range, and a system for refrigerant level monitoring in the refrigerant circuit comprising an apparatus as defined by claim 5 a system for in-operation level monitoring with the compressor switched on, comprising detectors for measuring the refrigerant superheat ($dT_{\ddot{u}}$) at the evaporator of the system, and a calculation circuit for determining whether the measured superheat ($dT_{\ddot{u}}$) lies above a predetermined limiting value ($dT_{\ddot{u}G}$), as an indication of improper filling,

wherein the detectors for measuring the refrigerant superheat ($dT_{\ddot{u}}$) at the evaporator comprise a first detector for measuring a temperature (T_{LVA}) on the evaporator outlet side, of a medium led over the evaporator for the purpose of cooling the medium, and a second sensor for measuring the refrigerant temperature (T_{KVE}) on the evaporator inlet side, and

wherein the calculation circuit is programmed to determine whether the measured superheat ($dT_{\ddot{u}}$) lies above a predetermined limiting value ($dT_{\ddot{u}G}$) based on a difference between the temperature (T_{LVA}) and the temperature (T_{KVE}).